



Health, environmental, and economic costs from the use of a stabilized diesel/ethanol mixture in the city of Sao Paulo, Brazil

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Abstract:

In Greater Metropolitan Sao Paulo, Brazil, fossil fuel combustion in the transportation system is a major cause of outdoor air pollution. Air quality improvement requires additional policies and technological upgrades in fuels and vehicle engines. The current study thus simulated the environmental and social impacts resulting from the use of a stabilized diesel/ethanol mixture in the bus and truck fleet in Greater Metropolitan Sao Paulo. The evaluation showed reductions in air pollutants, mainly PM10, which would help avert a number of disease events and deaths, as estimated through dose-response functions of epidemiological studies on respiratory and cardiovascular diseases. Valuation of the impacts using an environmental cost-benefit analysis considered operational installation, job generation, potential carbon credits, and health costs, with an overall positive balance of US\$ 2.851 million. Adding the estimated qualitative benefits to the quantitative ones, the project's benefits far outweigh the measured costs. Greater Metropolitan Sao Paulo would benefit from any form of biodiesel use, producing environmental, health and socioeconomic gains, the three pillars of sustainability.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution

Air Pollution: Particulate Matter

Geographic Feature:

resource focuses on specific type of geography

Urban

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Central/South America

Climate Change and Human Health Literature Portal

Health Co-Benefit/Co-Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

Morbidity/Mortality

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation, Mitigation

Model/Methodology:

type of model used or methodology development is a focus of resource

Cost/Economic

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Short-Term (

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content